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The cosmic web and the local universe

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Propositions

accompanying the dissertation

The Cosmic Web and the Local Universe

1. A multiscale approach is essential in recovering the complexity and the full wealth of structures present in the Cosmic Web. (Chapter 2)
2. While the Cosmic Web is formed by both prominent and tenuous structures, the latter prove difficult to identify in galaxy redshift surveys given that they are sparsely sampled by haloes and only populated with low mass haloes. (Chapters 2 & 3)
3. The filaments and sheets evolve from a tightly packed network of thin and short components to a system dominated at present time by a few massive structures. (Chapter 3)
4. The Milky Way-mass haloes found in the lowest density regions or in wall environments have 10 – 20% fewer substructures than the overall population. This effect does not play a role for our galaxy since the presence of our neighbour, M31, excludes the Milky Way from lying in such a low density environment. (Chapter 5)
5. The massive satellite population of our galaxy is very atypical, with at most 1% of Λ CDM haloes having a similar population of substructures. (Chapter 6)
6. “I may not have gone where I intended to go, but I think I have ended up where I needed to be.”
– *Douglas Adams*
7. Being successful in science, like in any other discipline, reduces to about 1% brilliance and 49% hard work, with the rest attributed to sheer luck.
8. “A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.”
– *Max Planck*
9. Science has split into too many fields and sub-fields with too little communication between each other. Whole groups are focused on solving problems whose solution is well known in other scientific fields.
10. “The truth may be out there, but the lies are inside your head.”
– *Terry Pratchett*

Marius Constantin Cautun, January 2014